Integrated governance arrangements of airport-region urban infrastructure development

Gaining insights from urban infrastructure development in the Brisbane Airport Region.

Overview

Polarising the issue of governance is the increasingly acknowledged role of airports in regional economic development, both as significant sources of direct employment and as attractants of commerce through enhanced mobility (Vickerman, Spiekermann & Wegener 1999; Hakfoort, Poot & Rietveld 2001). Most airports were once considered spatially removed from their cities, but as cities have expanded their airports no longer sit distinct of the urban environment. This newfound spatial proximity means that decisions for land use and development on either city or airport land are likely to have impacts that affect one another in either or both the short- or long-term (Stevens, Baker and Freestone 2007). These impacts increase the demand for decision making to find ways of integrating strategies for future development to ensure that airport developments do not impede the sustainable growth of its city, and likewise that city developments do not impede the sustainable growth of its airport (Gillen 2006). However questions of how, under what conditions, and to what extent decision making integration might be suitable for "airport regions" are yet to be explored let alone answered.

To attend to this emerging governance issue, the research provides a literature review of both traditional and contemporary literatures of governance. Following governance, an overview of an emerging planning concept for airport-region integration, the Airport Metropolis (Stevens et al. 2007), will help detail gaps in current governance understanding for "airport region" urban development. The highlighted overlaps and unanswered issues between these two domains of knowledge provide the basis for the primary research questions for the study. The research questions have been grounded firmly in governance network theory to emphasize the importance of the "mix" of decision makers for achieving mutually acceptable decisions for both airport and city.

The methodology to answer the research questions is then provided through the scheduling of an exploratory mixed-methods approach. This approach has been selected to provide rich contextual and focused verifiable data to explain and understand the impacts and effectiveness of existing governance arrangements for achieving mutually acceptable decisions. By detailing how, when and why different governance arrangements are currently selected, and whether, why and to what extent these arrangements are considered effective for achieving mutually acceptable development outcomes, effective and ineffective pathways for decision making will be identified. By applying governance theory to these findings, suggestions for improved governance arrangements will be articulated

through a framework that shows which governance modes and tools for are most (or least) likely to facilitate decision making that protects sustainable “airport region” development.

Contributions from the study are first made to governance theory by exploring the effectiveness of different decision making tools, forums and platforms for different governance arrangements, in particular to governance network theory and the role that decision maker relationships play in facilitating decisions under different governance modes. Second, contributions are made to both government and industry through the rigorous evaluation of existing governance arrangements to facilitate mutually acceptable outcomes from a range of developments. This identifies both the positive and negative aspects of existing arrangements so that future governance arrangements can be tailored so that development outcomes better meet the needs of both airport and city. Third, contributions will be made to academe through the provision of frameworks that describe appropriate and inappropriate governance arrangements for different types of urban development in “airport contested” decision making domains.

This work is in progress through the Airport Metropolis Research Project, under the Australian Research Council’s Linkage Projects funding scheme (LP0775225).

1. Introduction

1.1 Background

The Greater Brisbane Region faces population growth of 30% between 2001-2026 (Greater Brisbane ACC 2009). To meet the challenges of accommodating its rapidly expanding population, Brisbane City and the Queensland State Government have had to implement a range of transport and utility infrastructure projects, and reconsider the zoning of land use for development around the city. The rapid implementation of development has had its share of problems; some transport projects with immense cost overruns, residential land and commercial space prices soaring and transport corridors facing long hours of congestion daily.

However Brisbane is not alone in the growing pains its residents, businesses and government agencies currently experience. Meeting the demands of rapidly growing populations requires that residential, commercial, transport and utility capacities grow with them, but spatial, economic and social limitations complicate decisions for what, where, when and how to develop new urban infrastructure. Current planning strategies focus on spatial issues of population and commerce decentralisation (McLaren 1992; Gordon & Richardson 1996), mobility issues of public transport systems and regional access (Williamson 2005), but more and more the focus and dilemma for planners and decision makers centres on governance (Newman & Thornley 1997; Gillen 2006). That is, who to include in making decisions for local and regional types of development, how to include and organise them, and at what level of authority.

Polarising the issue of governance is the increasingly acknowledged role of airports in regional economic development, both as significant sources of direct employment and as attractants of commerce through enhanced mobility (Vickerman, Spiekermann & Wegener 1999; Hakfoort, Poot & Rietveld 2001). Most airports were once considered spatially removed from their cities, but as cities have expanded their airports no longer sit distinct of the urban environment. This newfound spatial proximity means that decisions for land use and development on either city or airport land are likely to have impacts that affect one

another in either or both the short- or long-term (Stevens, Baker and Freestone 2007). These impacts increase the demand for decision making to find ways of integrating strategies for future development to ensure that airport developments do not impede the sustainable growth of its city, and likewise that city developments do not impede the sustainable growth of its airport (Gillen 2006). However questions of how, under what conditions, and to what extent decision making integration might be suitable for 'airport regions' are yet to be explored let alone answered.

To attend to this emerging governance issue, the following research proposal provides a literature review of both traditional and contemporary literatures of governance. Following governance, an overview of an emerging planning concept for airport-region integration, the Airport Metropolis (Stevens et al. 2007), will help detail gaps in current governance understanding for 'airport region' urban development. The highlighted overlaps and unanswered issues between these two domains of knowledge provide the basis for the primary research questions for the proposed study. The research questions have been grounded firmly in governance network theory to emphasize the importance of the 'mix' of decision makers for achieving mutually acceptable decisions for both airport and city.

The proposed methodology to answer the research questions is then provided through the scheduling of an exploratory mixed-methods approach. This approach has been selected to provide rich contextual and focused verifiable data to explain and understand the impacts and effectiveness of existing governance arrangements for achieving mutually acceptable decisions. By detailing how, when and why different governance arrangements are currently selected, and whether, why and to what extent these arrangements are considered effective for achieving mutually acceptable development outcomes, effective and ineffective pathways for decision making will be identified. By applying governance theory to these findings, suggestions for improved governance arrangements will be articulated through a framework that shows which governance modes and tools for are most (or least) likely to facilitate decision making that protects sustainable 'airport region' development.

Contributions from the proposed study are first made to governance theory by exploring the effectiveness of different decision making tools, forums and platforms for different

governance arrangements, in particular to governance network theory and the role that decision maker relationships play in facilitating decisions under different governance modes. Second, contributions are made to both government and industry through the rigorous evaluation of existing governance arrangements to facilitate mutually acceptable outcomes from a range of developments. This identifies both the positive and negative aspects of existing arrangements so that future governance arrangements can be tailored so that development outcomes better meet the needs of both airport and city. Third, contributions will be made to academe through the provision of frameworks that describe appropriate and inappropriate governance arrangements for different types of urban development in 'airport contested' decision making domains.

Before entering into the governance literature an outline of the research objectives is provided in Section 1.2, and a brief set of core definitions is provided in Section 1.3.

1.2 Objectives

The proposed research aims to answer a number of core issues within literature and practice. First, network governance theory is often thought of as the ideal solution for solving complex governance issues (Skelcher, Mathur & Smith 2005; Sorensen & Torfing 2005), yet there are drawbacks in any governance approach (Rhodes 2007; Sorensen & Torfing 2007). Therefore the core objective of the proposed research is identifying whether or not applying network governance is actually the answer for what appears to be a highly complex issue of airport and city integrated development. Additionally, the proposed research will build on Keast, Mandell and Brown's (2006) emerging concept of 'crowded policy domains', an evolution of overlapping governance network theory and hybrid governance theory, with the objective of validating and further exploring the concept by providing a representative case study.

Second, objectives for practice are for identifying and providing improvements for decision making processes that are increasingly required to appreciate the needs of both city and airport development. In both practice and theory the influence of governance is a little understood concept for the operational outcomes of decisions (Provan & Kenis 2007), so through the contributions of both the Brisbane Airport Region case study and governance frameworks for integrated decision making, practice and theory will benefit.

1.3 Definitions

The range of terms used between the fields governance and airport planning processes are diverse, often using words interchangeably that confound meanings and interpretations from one field to the other. To delineate the use of terms in the following research proposal, Table 1 provides a list of key terms and their definitions, with their relevant links to literature.

Table 1. Terms defined for the proposed research

Term	Definition
Governance	The way in which society is organised to define who makes decisions, who is included in the decision making process, and how decision making actors relate to one another (Kooiman 2003).
Planning	A process that evaluates a 'problem', decides on a course of action, develops strategies to resolve the 'problem', and implements the developed strategy into physical representations of the decision (de Neufville & Odoni 2003; Tunstall 2006); effectively providing a link between ideas and action (Friedmann 1987).
Urban Infrastructure	Traditionally the term *urban infrastructure* has been used to describe transport, communications or utility networks within cities (Schuler 1992; Graham & Marvin 1994). Urban infrastructures are also referred to as *city engineering systems* that meet societal, economic and environmental demands and concerns (Sahely, Kennedy & Adams 2005). By considering both the *city engineering systems* perspective, and the changing role and integration of airports in regional and city economic development (Gillen 2006; Freestone, Williams & Bowden 2006), *urban infrastructure* for the proposed research will include the elements of the built environment that create, sustain, and grow societal capacities for 'city region' economic sustainability. Defined more specifically, *urban infrastructures* are residential, commercial, industrial, transport, communication and utility systems that are developed, maintained and modified to meet the economic, social and environmental concerns of a city region; a region which in the case of Brisbane includes its airport.
Actor	An individual, group, organisation or institution that has the ability to directly influence the decision making process for the delivery of urban development (Freeman 1984; Alexander 1998).

With terms made clear for the proposed study, the literature review for governance and the descriptions of Stevens and colleagues (2007) Airport Metropolis concept are provided below.

2. Literature Review

2.1 Governance and Airport Governance

Governance, in brief, is the way in which society is organised to define who makes decisions, who is included in the decision making process, and how decision making actors relate to

one another (Kooiman 2003). Governance legitimises and organises actors and institutions in decision making arenas, actioning authority under different sets of rules, moral orders and rationales (Keast, Mandell & Brown 2006). There are three broadly accepted modes of governance, hierarchical, market and network, each with its own advantages and disadvantages (Powell 1990; Rhodes 2007). This section provides a brief overview of the rules, moral orders and rationales underpinning each of the primary modes, their advantages and disadvantages, and their relevance to the field of city and airport decision making for urban infrastructure development. Furthermore, it details the disconnect of the theorised 'ideal' models of governance to governance application, revealing the complexities found within hybridised governance arrangements in today's decision making arenas. Focusing on the highlighted complexities and conundrums of hybridised decision making structures, governance is unpacked against modes of airport management to show how airport decision making, in the Australian context, is an increasingly networked affair. With this network approach in mind, as Australian airports begin to focus on their surrounding community impacts, more and more the rationale for integrating airport concerns into decisions made beyond the airport fence appears justified.

2.1.1 Hierarchies

Hierarchical governance is considered the accepted model of state influence over decision making (Rhodes 2007; Peters & Pierre 1998). A hierarchy is built around a centralised point of control that embodies the constitution and principles it was formed on, and has an underlying authority of physical force if required (Rhodes 2007; Kooiman 2003; Thorelli 1986). Strict adherence to constitutions and principles that bind accountability with vertically defined pathways of authority means that hierarchical governance is often slow to respond to change due to its embedded checks and balances (Kooiman 2003). Slow responsiveness creates inefficiencies in capturing value from dynamic decision making spaces (Williamson 1987), however hierarchies are still valuable to ensure that long-term objectives are maintained over time, and respond well to routine issues (Hill & Laurence 2004). Planning and decision making is typically thought of, in the hierarchical arena, as for the public good, with the expectation that planned outcomes will be better than the product of free market decisions (Gleeson & Low 2000). The protection of public concerns is evident in airport governance around the world as, regardless of applying any one of a

diverse mix of governance approaches to operating airports (Graham 2003), planning of airports remains subject to the hierarchical checks and balances of government oversight (de Neufville & Odoni 2003). In contrast to the apparent protection that government oversight and regulation provides, preliminary discussions in the Brisbane case show that private firms can sometimes gain development approval without the support of State or Local Governments due to inconsistencies in legislation.

Internally (state) resourced and driven approaches to urban infrastructure development typically lack flexibility, an attribute essential for lengthy and/or complex projects to adapt to changes in their task environments to maintain efficient delivery (Koppenjan 2008). In its defence, hierarchically centralised authority does allow for deadlocks between actors to be resolved in absolution, allowing developments to progress through climates of conflict (Miller & Lessard 2008). In seeking rapid, efficient and flexible urban infrastructure development, governments have been increasingly forced to turn to market based resources (Koppenjan 2005); shifting from direct government control to more arms-length, market inclusive approaches (Betancor & Rendeiro 2000; Graham 2003; Wallis 1993); both in implementation and ongoing operation.

2.1.2 Markets

Market governance is best described as structures and systems underpinned by the ethos of competition, supply and demand, and paying for what is used (Keast et al. 2006; Denhardt & Denhardt 2000). Relationships within markets are described as arms-length or contract based, in contrast to the vertical integration of hierarchies (Dyer 1996). Markets are commonly attributed to efficiency and optimised provisions of goods and services, and are quick to adapt to changes in the environment (Williamson 2002). In seeking market resources and operational efficiency, government hierarchies have often attempted to adopt market governance attributes (Denhardt & Denhardt 2000; Kettl 2000; Moon 1999), however adverse social consequences show that it is not always a desirable influence on urban communities (Coase 1960; Davies 2000). Still, many governments have pursued some form of market based governance for airport oversight (Graham 2003), the provision of housing (Linneman & Megbolugbe 1994), utilities (Marvin, Graham & Guy 1999) and roads (Helm & Thompson 1991); chasing efficiency, resources and expertise beyond the means of government (Koppenjan 2005). Results have been mixed, with some airports receiving high

praise for their newfound performance (de Neufville & Odoni 2003), others appearing to perform no better than under their previous hierarchical controls (de Neufville 1999), and in an extreme case the almost complete collapse of a nationwide system of airports (Lipovich 2008). Criticisms of utilities, roads and housing primarily stem primarily from issues of accountability and oversight (Mulgan 2002) and elitist favouritism (Kumaraswamy & Zhang 2001), and there seems to be a mixture of development outcomes from ready adoption to outright rejection (King & Pitchford 2002). The wide variation in results shows there is still much to be learned in applying market approaches to development decisions (Koppenjan 2005).

The strategic planning of airports, in contrast to their management, has seen far less experimentation of control. Airport planning is essentially the function of deciding what to build to meet forecasted demand (de Neufville & Odoni 2003). Placing the focus on future needs creates tensions between airport operator strategic goals and local community interests; airport agendas of growth promising increased impacts of noise and congestion (Szyliowicz & Goetz 1995). So leaving airport planning without (or with poor) oversight is likely to result in outcomes that, while good for regional and airport growth, unfairly impact on local communities (Humphreys & Francis 2002). The governance of airport planning in Australia is a currently contested space, with the guiding legislation (Airports Act 1996) that provided Australia's airports to be privatised seeing its first major revision with the newly proposed National Aviation Policy (see DOITRDLG 2008).

In addition to planning airport growth is the implementation of their proposed development, a function that relies on the defining of airport implementation actors, and the governance of actor relationships to coordinate the design and construction of airport infrastructure (Gil, Beckman & Tommelein 2008). Planning and implementation relationships under market governance are strategic, are dictated by concerns of efficiency, supply, and demand, and are typically managed through contracts and performance based agreements (Williamson 1979; Platje et al.1994). Contracted performance indicators manage time and cost amongst a range of outsourced firms, each selected for its task specialisation, providing optimal functionality for price (Williamson 2002). So under a market model, project implementation favours the provision of infrastructure to meet projected demand, focusing on profit maximisation (Tunstall 2006; de Neufville & Odoni

2003), without necessarily considering the fairness of impacts that extend beyond the airport fence. In response to state concerns for airport local communities, airport planning in Australia now requires stakeholder engagement (DoITRDLG 2007); a clear attempt to reduce sub-optimal airport planning outcomes through legitimising horizontal actor interests into airport decision making (Amaeshi & Crane 2006); in short, applying a more network approach to airport decision making. This approach is not isolated to airport decision making, as current trends in urban development and infrastructure increasingly require public consultation and inclusion into decision making processes (Gleeson, Darbas & Lawson 2004), however deliberative nature of these processes is debated (Hendriks 2002).

2.1.3 Networks

Network governance expands the scope of actors involved in decision making beyond traditionally accepted roles of 'elected' decision makers, bringing insights to the decision making domain through public, private and community participation (Sorensen & Torfing 2005). While the inclusion of diverse decision making actors can manifest without network arrangements (Skelcher, Mathur & Smith 2005), the increasing interdependence of resources spread amongst actors means that decisions are being made in an increasingly "complex, fragmented and multi-layered society" (Sorensen & Torfing 2005, 197). So for individual actors no longer have all of the resources necessary to fully consider, make and implement decisions without inputs from a diverse range of community, industry and political actors (Rhodes 1990; Marsh & Rhodes 1992; Pierre 2000).

Relationships under network governance are decidedly horizontal, with decision making authority spread to the entire network, not a single locus of control (Milward & Provan 2000). Under the network or community approach increased actor inclusivity is evident in spatial planning and urban infrastructure developments, such as state arterial roads, residential development and the expansion of transport systems (Albrechts 2006). Airport and region based planning should favour, under a network approach, urban infrastructure development that brings value to a (diverse) set of needs and agendas, identified and brought forward through stakeholder deliberation within the decision making network. The authority to make changes, and the accountability of performance measures is to the network of decision makers rather than a single locus of control (Pierre 2000). This highlights that network governance is reliant on interpersonal (actor) relations to facilitate

decision making reciprocity and control (Keast, Mandell, Brown & Woolcock 2004; Phelps & Tewdwr-Jones 2000). In addition, by acknowledging the interdependence of actors, stakeholders external of decision making networks have become more prominent, reinforcing the decentralisation of power within networks (Black 2008). Therefore each actor has stakes to lose, turf to protect, and contributions to share that may also be influenced by their interactions outside of a given decision making arena. While inclusivity in decision making appears to promote fairness and dynamism, network governance arrangements have been noted to fall short of truly deliberative and democratic decision making practice (Sorensen & Torfing 2005). In effect, the inclusion of new stakeholders into planning decisions creates a governance network, where actors aim to steer decisions in the interests of both the decision making network, and their affiliated stakeholder interests (Sorensen & Torfing 2005).

Governance Networks

Attempts to solve complex societal and organisational issues through network governance have often led to the formation of governance networks, bringing diverse sets of actors together to deliberate in the policy process (Sorenson & Torfing 2007; Rowley 1997). The process of selecting of governance network actors from a population of stakeholders has meant that under- and non-representation of stakeholders, transparency, and the articulation of public interests are often found to be issues left unaddressed in the forming of governance networks (Klijn & Koppenjan 2000). Additionally, governance networks have a 'dark-side' to deliberative processes, in that they are self-regulating (Scharpf 1994), and that focus and power is given too much to large interest groups, whose interests may not necessarily be representative of the affected publics' concerns (Sorensen & Torfing 2005).

Decision making networks often fall short of making decisions (Davies 2000), lacking the ability to move beyond discussing issues to deciding on them (Parker 2007). The literature shows that when transport infrastructure decision making networks face difficulty in gaining consensus, they often revert to more market and hierarchical arrangements (Klijn & Teisman 2003), allowing planners to "force through decisions on infrastructure" without society's general acceptance (Glasbergen & Driessen 2005, 265). So while infrastructure developments under network approaches may appear to be more inclusive of actors in decision making processes, decision outcomes may not necessarily be built of actor

consensus, or societal will. This is a problem as airport local communities inevitably bear many burdens on behalf of regional development gain, so in all fairness, local communities have significant stakes in decisions that may impact their ways of life (Bozeman 2002; De Bruijn & Dicke 2006). Pursuing economic gains at the cost of societal values and acceptance is an end game that can only lead to grief.

2.1.4 Hybrids

The previous sub-sections have presented the three governance modes as 'ideal' models. While each mode has its benefits, they also demonstrate clear weaknesses in addressing societal issues. While hierarchies provide stability, they are slow to react to change and are typically inefficient (Rhodes 2007). While markets drive efficiency and are fast to react to change (Williamson 2002), they are often opportunistic at the expense of community minorities, and tend to lack transparency in their operations (Davies 2002). While networks are highly inclusive and aim to build consensus amongst actors (Milward & Provan 2000), they are often slow to deliberate and result in decisions that are not always representative of what they originally set out to achieve (Davies 2000), and can even fail to make decisions (Parker 2007). Summarised below in Table 1, the three primary governance modes show their typological approaches to governing the interactions of decision making actors for urban infrastructure projects.

In reality, arrangements to address societal issues mix and borrow elements from a combination of governance modes, drawing on the benefits of one to limit the negative attributes of another. The mixing of governance modes, bringing more and more horizontal actors into decision making arenas (Peters & Pierre 1998), means that decisions are now increasingly negotiated than delivered (Rhodes 1997). In the pursuit of some measure of fairness, the rationale for mixing hierarchical, market and network governance is to balance mechanisms that steer society (Hill & Laurence 2004) in an increasingly stakeholder driven society (Bovaird 2005). To govern decision making within a specific task environment, arrangements require careful consideration of how relationships should be oriented, influence and authority be distributed, and processes and outcomes be focused in the task, and the development of urban infrastructure in airport regions is no exception.

Table 2: Governance of urban infrastructure decision making

Governance Mode	Hierarchy	Market	Network
Orientation of actor relationships	Authoritative	Exchange	Interactive
Mechanisms of actor integration	Central and legitimate authority, rules, regulations, codes of practice, procedures, legislation.	Formal, legal contractual arrangements, arms-length transactions, bargaining.	Interpersonal trust, mutuality and reciprocity for actions, negotiating
Focus for managing development	Administrative procedures and accountable outcomes	Contractual delimitation and outcome efficiency	Utilising group resources and providing outcomes that satisfy group concerns

(adapted from Keast & Hampson 2007)

Airports are arenas typically rife with the 'mixed' provision of 'public' infrastructure, and Australia's Airports Act 1996 is representative of a hybrid governance arrangement that appears to be tailored to the task of providing public infrastructure. The Australian example provides that airport planning is a function of airport operators, which is required by law to include community stakeholder engagement in the formulation of strategic plans, whose decisions are approved via the oversight of the Federal Transport Minister. This example is easily identifiable as a hybrid as the operation of Australia's major airports has been privatised in pursuit of efficiency (market); fairness in strategic decisions has been pursued through the inclusion of community stakeholders (network); and oversight from the Federal Government ensures transparency and accountability in the strategic decision making process (hierarchy).

In pursuing efficiency improvements and additional resources, many hierarchical organisations have adopted market-based controls, drawing resources and expertise from

external agents to fulfil strategic goals (Rhodes 1997). As the number of actors participating in decision making increased, the centralisation of authority and control diminished; decisions increasingly outsourced or made in partnership with other actors (Pierre 2000). The decentralisation of decision making in airport development is evident in the arrangements that bring together airport operators and their outsourced resources, including public-private-partnerships, buy-operate-transfers, managed contracts, joint ventures, and alliances (Dempsey 1999).

New actors brought an increasing diversity in decision making authority, and, through the identification and inclusion of new stakeholder relationships within decision making arenas, pushed network and governance network theory to the fore (Sorensen 2002). Governance networks can appear as one of three distinct sub-types of network structures; participant-governed networks, lead organisation-governed networks, and network administrative organisations (Teisman & Klijn 2002; Provan & Kenis 2007). Each of these sub-types demonstrates different loci and breadths of control, informing debates of effectiveness versus efficiency, internal versus external legitimacy, and flexibility versus stability in network governance arrangements (Provan & Kenis 2007). Provan and Kenis (2007) have called for further enquiry into the interrelationships between governance and actor interactions, and how this may affect operational outcomes, contributing support to the rationale for the proposed study.

2.1.5 Crowded Policy Domains

Legitimate authority within polycentric decision making regimes (such as governance networks) is often difficult to define (Black 2008; Skelcher 2005), as there may be a number of actors within varying governance types competing for decision making influence (Keast, et al. 2006; Skelcher, Mathur & Smith 2005). Where governance modes overlap and interact with each other in hybrid arrangements, inconsistencies can appear in the interpretations and responses to issues of decision making (Black 2008); these decision making spaces of overlapping and sometimes competing governance structures have been defined as ‘crowded policy domains’ (Keast et al. 2006, 2).

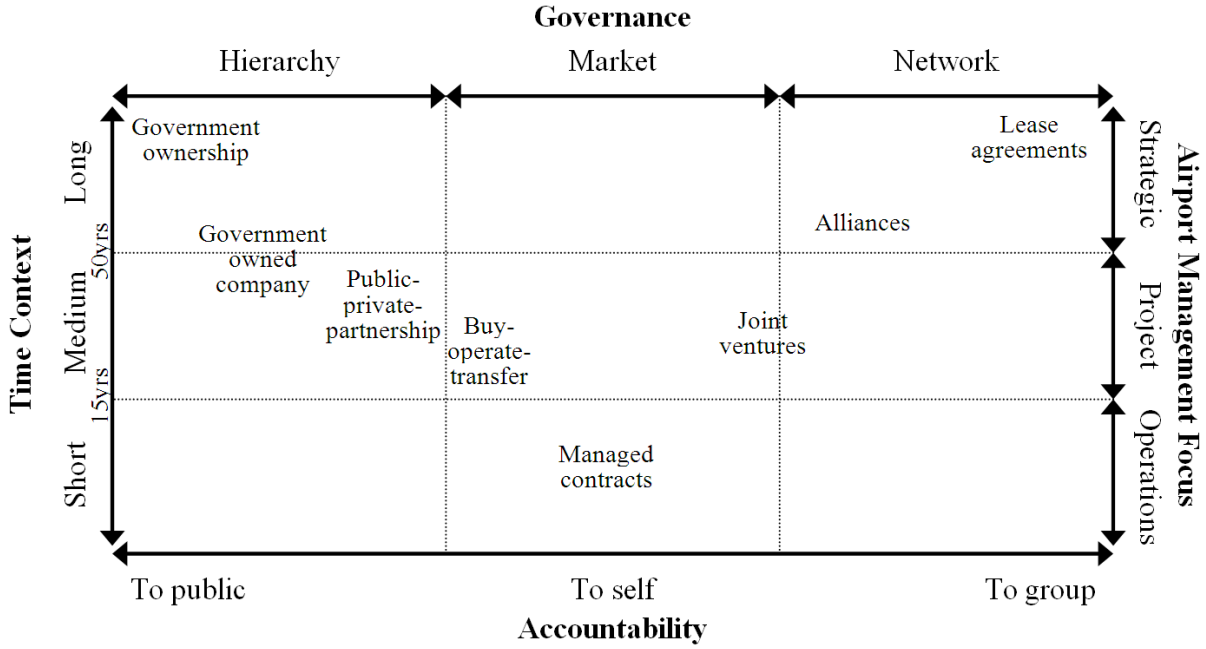
In general, how each actor responds to decisions made is dependent on their perceptions of how legitimacy is gained (Tyler 1990; Chayes & Shelton 2000), which more importantly, is

influenced by their governance structure (Thorelli 1986; Jones, Hesterly & Borgatti 1997; Rhodes 2007). Black (2008) suggests that legitimacy may be constructed, especially where non-state actors in need of authority may not be supported by legislation. Where competing claims of authority arise in complex decision making domains such as airports, legitimacy is likely to be sought by multiple actors, making decisions that please all actors highly unlikely (Black 2008; Skelcher 2005). Analysing the interactions and interrelationships between decision making actors in crowded domains will help to inform the field of complex decision making in polycentric environments.

2.1.6 Airport Management and Airport Governance

Airport management differs from airport governance in a very simple way; airport governance sets the bounds of authority in which airport management can make decisions, while airport management is the process of making decisions for the operational, developmental and strategic arenas of running an airport. Firstly, the ownership of an airport will have an influence on how authority is ceded to airport management, and what this means for the managerial focus of managing firms (Carney & Mew 2003).

Ownership of airports can differ from completely government owned and operated, through to completely privately owned and operated, with a continuum of state and private variations in between (Graham 2003). The arrangements governing an airport's privatisation have implications to how it is managed (Carney & Mew 2003). These arrangements set rules for authority, accountability and tenure, and the management focus should differ from one arrangement to the next (Carney & Mew 2003). Different management focuses and privatisation techniques are better suited to different governance archetypes (Keast, et al. 2006; see Figure 4), and while many airport cases adopt suitable modes of privatisation to achieve desired goals, other cases show that mismatching the mode of privatisation to desired management goals is associated with failed privatisation attempts (Donnet, Keast & Walker 2008). The below model was developed from a review and analysis of 18 airport cases spread worldwide, which contributed to the mapping of airport operator accountability against typical management foci for each arrangement.



(adapted from Donnet et al. 2008)

Figure 1. The fit of governance, privatisation and airport managerial focus

This framework highlights that that airport decision making should be dominantly influenced by the governance archetype associated with its mode (or level) of privatisation. For example, decision making for an airport that is wholly owned and operated by government will be subject to hierarchically dominant checks and balances, with authority highly centralised, and oversight focused at gaining public acceptance. Alternatively, decision making for an airport that is wholly privatised will be characterised by horizontal linkages with stakeholders, with authority decentralised, and oversight focused at gaining acceptance from the group of interested stakeholders.

This rationale for managerial accountability is based on the mix of checks and balances built into contracts, and the disincentives of adverse reactions from their arenas of accountability. Brisbane Airport is at the heart of the primary case study, and falls within the network/strategic corner of the framework, so is highly accountable to its appropriate groups of stakeholders, and appears well suited to making strategic decisions as the operator has enough 'free-reign' to be creative, but is balanced by the regulatory oversight of the Australian Federal Government (Donnet et al. 2008). Due to the strategic focus of Brisbane Airport's management, additions and expansions to Brisbane Airport's

infrastructure should be left to outsourced organisational resources and expertise, gaining efficiencies through arrangements such as public-private partnership (PPP), buy-operate-transfer (BOT), or joint ventures (Carney & Mew 2003). Current major infrastructure expansions at Brisbane Airport are serviced through joint ventures; this fact coupled with the understanding of accountability, management focus, ownership structure and projected growth makes Brisbane Airport representative of literature's expectations of privatised airport expansion (Donnet et al. 2008; Carney & Mew 2003; de Neufville & Odoni 2003).

The urban infrastructure development dilemma

The long tenure of Brisbane Airport's leasing agreement means that even small changes in its operating environment now are likely to sum up to significant impacts over the long-term. While Brisbane Airport's operator has the ability to plan and manage developments on airport land, the ingress and egress of aircraft to its runways are via flight paths that hover above an urban environment that the airport has no direct legal claim over. From the airport's perspective the airport land and the airspace above it can be considered a 'controlled' spatial environment, while beyond the airport fence lies outside of its control. Any developments beyond the airport fence that impinge on the ability of aircraft to safely operate create a real and serious dilemma for the ability of the airport to continue safe flight operations. Even developments that do not impact on the safety of air traffic have been known to force changes to airport operations. For example in the case of Girona Airport in Spain, a new residential development was approved under an existing take off/landing flight path, once residents moved in they lobbied government to have the noise reduced and won; the result a modified flight path and morning and evening curfews for the airport (Appold, Baker, Donnet, Kimmet, Van de Riet & Van Twist 2008). This kind of result at Brisbane Airport would likely result in lost revenues from reduced flight capacities, and the urban sprawl of Brisbane City means that noise would simply be redistributed to another urban community, generating further 'bad press' for the airport.

From the above rationale and example, it is clear that Brisbane Airport holds significant stakes in some forms and locations of current and future urban development beyond its boundary, particularly in areas that sit underneath and are affected by flight paths. Just as Brisbane Airport may feel isolated in its (lack of) ability to legitimately impose demands on

the urban environment surrounding the airport, Brisbane City holds similar concerns over developments inside of the airport fence.

Road infrastructure upgrades inside of the airport fence have impacts on traffic congestion on local surrounding roads, and the development of a new runway promises newly noise affected land users as the runway is expected to come online in 2015 (BAC 2006). Freestone et al. (2006) also critiqued the commercial and retail developments that saw negative market, community and government feedback for allowing non-aviation specific business development on airport land. The backlash from local actors demonstrates the reciprocal stakes held by Brisbane City over development inside of the airport fence. So the dilemma for any airport effected urban infrastructure development, be it inside or outside of the airport fence, is to what degree should city and/or airport concerns be legitimised into decision making processes.

Answering this dilemma has already proven to be difficult at best, with existing planning models and legislation attempting to address concerns (Blanton 2004; Freestone et al. 2006), but with limited to no effect (Yigitcanlar, Martinez-Fernandez, Searle, Baker & Velibeyoglu 2008; Charles, Barnes & Clayton 2007). By removing the closed boundaries and self advancing land use planning strategies of isolated city and airport decision making, and starting afresh with the fundamental underpinnings of decision making, that is, governance, the foundations of a robust answer to the integrated city/airport decision making dilemma can be created. In reality 'wiping the slate clean' of boundaries and institutionalised rule structures is simply too large a step change for organisations to accept, so answers forwarded must appreciate both the existing state of isolated decision making, and the desired future of integrated, mutually appreciative decision making.

A concept forwarded as a holistic approach for integrated airport and city planning and development is the Airport Metropolis concept (Stevens et al. 2007). While only in its nascent stages of development, its founding tenets align well for solving the Brisbane Airport Region issue of city and airport stakes in each others' urban infrastructure developments. The following section provides a brief overview of the Airport Metropolis concept before research questions are provided.

2.2 The Airport Metropolis Concept

Urban planning literature surrounding airports and ambitious development initiatives is transitioning from project isolated decision-making and planning requirements, to the development of highly integrated planning models (Olds 1995; Kasarda 2001; Black 2008). An increased acknowledgement of non-local impacts of development has led to the appreciation of both regional, and local, impacts of development initiatives. This new understanding has brought with it new heights of complexity to master planning, as is evident in the evolution of planning from Blanton's (2004) 'airfront' to Kasarda's (2001) Aerotropolis model to the emergent Airport Metropolis concept (Stevens et al. 2007). The following sub-sections highlight the increasingly interconnected role of airports to their regions, with planning models moving from the localised, isolated development of airport cities and airfronts to the regionally impacting Aerotropolis, and finally the city-airport integrated ideals of the Airport Metropolis concept.

2.2.1 From Aerotropolis to Airport Metropolis

An Aerotropolis is a newly recognised urban form. It is similar to the traditional metropolis format, where there is a core city surrounded by commuter-linked suburbs, but differs in that the airport is now the focal business district affecting development (Kasarda 2001). Aerotropoli affect surrounding urban areas via the emergence of agglomerations of aviation-related of firms, closely tied to airport feeding transportation corridors (Kasarda 2001, Kasarda 2006). As an airport continues to grow, so does its influence on the surrounding urban environment, with aviation-related development argued to spread as far as 32 kilometres from the airport boundary (Kasarda 2001).

Many major airports around the world are being planned, or re-built, in convention with the Aerotropolis model; Taoyuan, Schiphol, Jabal Ali, Dallas Fort Worth to name but a few (Kasarda 2006; Charles et al, 2007). The inclusion of value adding, non-aviation based firms within the boundaries of airports diversifies the use of the spatial environment to make the airport a form of city in itself (Wells & Young 2004). An Aerotropolis can be thought of as a diverse city centre composed of airport activities, retail, hotel and logistics operations, supported by aviation-related firms stretching along transport infrastructures. In this way the airport moves beyond the role of a transport hub, attracting new business and providing

the surrounding urban environment with a diverse set of service and employment opportunities (Kasarda 2004), thus tying the 'airport city' to its urban surrounds.

Actioning infrastructure development that supports diversified revenue and passenger growth requires a range of projects that differ in nature, task complexity, and institutional oversight. Increasing an airport's passenger and non-aviation traffic requires new or upgraded road and/or rail connections, passenger facilities, utilities, areas for commerce, and aviation infrastructure (de Neufville & Odoni 2003). The increased interactivity between airport, government and local community actors brings added complexity to the planning and development of airports. This is particularly evident where jurisdictional boundaries (possibly of different levels of government) intersect with airport boundaries, creating difficulty in identifying relevant agendas, and coordinating decision-making processes. Creating a diverse mix of airport and market offerings within the same spatial environment also increases the demands on the capacities of both internal and locally external transport and utility infrastructures (Graham 2003). The increases in diversity and demand add complexity to the planning of not only airports, but to their surrounding urban environments (de Neufville & Odoni 2003; Goetz & Szyliowicz 1997), as newly created employment increases local housing and commercial real estate demand, and increased commercial activity places new demands on local and regional transport networks.

Adding to these complex urban planning demands are industrial agglomerations that typically appear immediately adjacent to airport boundaries, known as 'airfronts' (Blanton 2004); the fit of airfront development to the above planning models is seen in Figure 2. Airfronts incorporate industrial clustering into regional planning processes to enhance the creation, and capture, of economic value from airports (Blanton 2004; Yigitcanlar et al. 2008). While this form of planning and development initiative addresses the synergies possible between industrial and airport arenas, little focus has been given to the commercial districts surrounding airports (Blanton 2004), nor to the impacts that new airport local development imposes on city planning. Looking beyond local, 'one-way' impacts of airport related development is the Airport Metropolis concept forwarded by Stevens and colleagues (2007), which looks towards more communicative planning processes to resolve airport and city tensions through enhanced horizontal communication pathways between decision making actors (Healey, de Magalhaes, Madanipour & Pendlebury 2003).

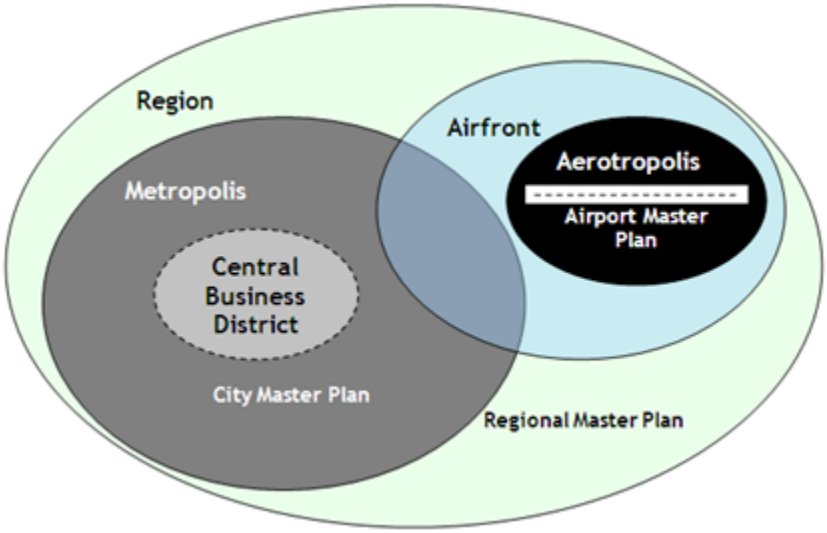


Figure 2. Foundational urban planning models for the Airport Metropolis concept

Therefore the Airport Metropolis concept tries to move beyond the airport-centric focus of the traditional rational comprehensive approach common to airports (Alexander 1998; de Neufville & Odoni 2003). The Airport Metropolis is a planning concept that is proactively seeking to coordinate airport planning and (airport regional) urban planning (Stevens et al. 2007), thus providing a theoretical space that crowds seemingly disparate goals, agendas and institutions into a horizontally aligned decision-making platform. In short, the concept represents a crowded policy domain that is increasingly focused to solving issues of both airport and city/regional development through a governance network approach.

2.3 Synergy and Gaps in the Literature

Governance network theory provides an ideal lens for unpacking governance arrangements currently utilised for airport region urban infrastructure. Building governance networks implies the creation and use of horizontal ties between multiple decision making actors without the assumption of community, business and societal diversity in the decision making mix. In essence, governance networks are created to solve issues by purposefully legitimising actors into decision making authority (Skelcher 2005; Sorensen & Torfing 2005), so an analysis of decision making processes through the governance network perspective does not have to assume that decision making is decentralised. Instead, decisions are made by groups of selected individuals, legitimised by the underpinning arrangements of governance that determine who is selected, how they relate to one another, and how they transfer information between one another.

While current decision making for urban infrastructure development for both airport and city (in the Brisbane Airport Region) remains mostly isolated of one another, it is not a current ability of literature to show whether more integrated arrangements between airport and city could or should lead to improved decision making outcomes (Provan & Kenis 2007). In crowded policy domains there are multiple arrangements governing the legitimising of actors, relationships and modes of communication (Keast et al. 2006), so the structuring and management of governance networks in 'crowded spaces' is likely to be difficult at best. By providing frameworks and/or processes that help manage the interface between airport and city/region decision makers, the opportunity for regional integration such as the Airport Metropolis concept have a more realistic opportunity for their acceptance and implementation into city and/or regional planning strategies.

To bring light to this overlap in governance and urban infrastructure planning, and to provide adequate exploration of existing governance arrangements so that an evaluation of whether the Airport Metropolis concept can, in theory, become a reality, the following section details the questions to be answered in the proposed research.

3. Research Questions

Expanding cities face inevitable problems when they are proximal to airports. Population growth increases the demand for urban infrastructure development to keep pace with expansion in residential, commercial, industrial, transport and utility demand. Likewise, growing populations and economies place an increasing demand on their airports to connect them to the world, encouraging infrastructure development to create new capacities to meet this demand. The excessive land scarcity that both of these simultaneous 'growth factors' contribute to, means that urban infrastructure development, either outside or within the airport fence, has a high likelihood of creating problems for the sustainable growth of the region as a whole. Existing decision making processes for city and airport development typically sit separate of one another, particularly in the Australian city airports sector, so from this isolation in decision making there are expected and realised tensions created from current development decisions.

The Airport Metropolis concept forwards the ideals that more integrated strategies of planning and development are an improvement on existing isolated platforms of planning,

yet no empirical research into the integration of airport and city decision making has been made to validate whether formal integration of airport and city decision makers could improve on existing processes. Limiting the issue of integration to the 'airport region' of the Airport Metropolis concept, and the governance network attributes of decision maker inclusiveness, relationships and processes, the following research questions focus the study to meet the objectives of the research for the Brisbane Airport Region case (see Section 1.2):

RQ1: How can governance arrangements be applied to city and airport urban infrastructure development decision making so that outcomes minimise or mitigate negative impacts on the sustainability of an airport region?

SQ1: What are the current governance arrangements for the types of urban infrastructure development in both airport and city?

SQ2: What are the enabling and impeding systems, processes and relationships within the existing governance arrangements for achieving sustainable outcomes for the airport and city in isolation of one another, and for them both?

SQ3: How do the identified enabling and impeding systems, processes and relationships contribute to the sustainability of the decided outcomes?

SQ4: How does governance theory inform and build on the answers from SQ1-3 to minimise or mitigate the outcomes that are seen as negative for city, airport and airport region sustainability?

SQ5: How would integration of urban infrastructure development decision making between airport and city impact on outcomes for city, airport and regional sustainability?

By answering the above questions, the Airport Metropolis concept will have its first case study detailing the likely required governance arrangements to facilitate an Airport Metropolis strategy being deployed on an airport region. Additionally, network governance literature will be provided with empirical data that links the processes and relationships to decision making outcomes, a core gap in current governance understanding (Provan & Kenis 2007). To operationalise the above research question and sub-questions, the below

(Section 4) research methodology links the approach of the research to the context and theories used, and provides a schedule of research tasks to be employed for answering each of the above questions.

4. Method

4.1 Approach

Using an exploratory approach is both relevant and practical for the research due to the emergent nature of polycentric decision making in crowded policy domains (Black 2008; Keast et al. 2006) and the Airport Metropolis concept (Stevens et al. 2007). By grounding the proposed research in a network perspective where different actors, tasks, rules, and environs all contribute to the decisions actors make, a critical realist philosophy has been adopted (Morgan & Smircich 1980). By replicating the application of a mixture of qualitative and quantitative methods over time, patterns of behaviour may reveal themselves within an embedded case study design (Yin 1994), providing evidence to understand how governance is operationalised in the delivery of airport infrastructure projects.

4.2 Research Design

An exploratory embedded case study approach has been selected to explain and understand how current modes of infrastructure development governance enable (or disable) both airport and airport region sustainability. Using case studies for the investigation of governance networks has been supported in recent literature (Sorensen & Torfing 2005; Agranoff 2007), and is a useful design for its utility in answering questions of 'how' and 'why' (Yin 1994) for phenomena that the researcher has no influence over (Miles & Hubermann 1994).

Individual transport, airport, commercial and residential developments will create a suite of embedded cases within the primary case of the Brisbane Airport Region, Australia. The Brisbane Airport Region was selected for the sizeable projected growth numbers for regional economy, regional population and airport passenger demand (Guhathakurta & Stimson 2007; BAC 2009). In addition, debated are the urban development strategies currently employed for the Brisbane and South East Queensland Region for the apparent need for increased government intervention for achieving integrated city-region strategies

for sustainable development (Gillen 2006). Unpacking the governance of transport, urban and airport development will answer whether and to what extent government intervention is suitable for the future development of the Brisbane Airport Region.

Each embedded case will highlight the apparent need for integrated airport and airport region decision making, with investigations focused on determining the ability of current governance arrangements to appreciate the 'dual concerns' of both airport and region. Collating and comparing the evidence between each embedded case will enable the development of a decision support framework (DSF) for the case of the Brisbane Airport Region. The DSF will highlight the pros and cons of each governance arrangement to suggest which arrangements under which conditions appear more suitable than others for promoting the protection of airport and airport region 'dual concerns.'

Applying a mixed-methods approach to the embedded case studies will enable qualitative methods to provide a rich exploration of each governance arrangement, while quantitative methods will add value with analytical data to highlight effective and ineffective methods, tools and forums within the application of each governance mode (Creswell 2003; McNabb 2002). Triangulation of multiple methods and sources of information will also add to the construct validity of the investigation and draw out greater meaning from the cases (Denzin 1978; Creswell 2003). With that in mind, the design of the research includes a number of different data sources and methods, including documentary analysis, key informant interviews, focus groups and questionnaires that cover a range of different government, commercial and airport actors for each embedded case.

4.2.1 Embedded Case Selection

Having already identified the primary case of the Brisbane Airport Region (see section 3.2), this section details the proposed strategy for screening and selecting infrastructure, residential, commercial and airport developments for investigation at Brisbane Airport. Due to the limited number of developments that appear to influence both the Brisbane Airport and Brisbane City, the use of a purposive sampling strategy is to be applied to select the developments that appear to attract 'dual concerns' from airport and airport region. The Airport Metropolis concept has been used to rationalise the spread of embedded cases across urban, airport and transport development, thus improving the ability of the study to

be replicated at other airport regions that appear representative of similar pathways of growth to that of the Brisbane Airport Region.

4.3 Data Collection

Data will be collected using three different methods, both qualitative and quantitative, to ensure sufficient richness and verifiability of responses to make well informed, defendable conclusions from the analysed data. The methods to be used are documentary analysis, key informant interviews, and administered questionnaires. The following sub-sections detail how they will be used and how the information gathered in each method contributes to answering the research questions.

4.3.1 Documentary Analysis

Method

To identify the existing governance arrangements in place for each embedded case, documentary analysis will provide the espoused governance platforms, forums and relationships utilised by development decision makers (Bryman 2004).

Sample

Documents analysed will include each of the developments' formal statements of agreed governance, the current airport master plan and major development plans and business case documents. The documentation for each development is lengthy but provides a comprehensive summary of the formal agreements, relationships and communication pathways between decision making actors, and will be useful for reflection throughout the proposed study.

Measurement

Using Hodder's (2000) method for collecting data from texts, the context, boundaries, and definitions for each development's governance arrangements will first be identified, detailing similarities and differences between the espoused governance and the expectations set in current governance literature.

Analysis

NVivo 8.0 will be used as a tool to facilitate the analysis of the collected data from texts due to the volume of documentation to be analysed. Similar strings and themes of text will be

grouped and coded. The coded data will then be reviewed for the relevance to existing governance theories (Silverman 2000), providing an initial verification and comparison of espoused governance mode to 'understood' governance mode. This will provide lists of actors, relationships and communicative processes that are formally adopted within each embedded case, and will form a core building block for the comparison of interpretation and analysis of interview responses.

Related Research Questions

Documentary analysis will list the formal governance arrangements for each urban infrastructure development, contributing to SQ1, with reporting documents also enabling an initial understanding for SQ3.

4.3.2 Key Informant Face-to-Face Semi-Structured Interviews

Method

To initially verify the lists of actors, relationships and communicative processes identified from the documentary analysis, face-to-face interviews will be used. Questions will be semi-structured, allowing respondents to expand on questions and enter their own positions on the research topic, which also provides a reflective tool for focusing questions in future interviews. Questions will aim to verify the data gathered from documents, and to investigate informal, unreported relationships, communicative processes and actors involved in the decision making process for each embedded case. The questionnaire from Section 4.3.3 will also be administered during each interview to insure it required response rate is achieved.

Sample

A sample of convenience built from a snowball strategy will utilise the relationships within QUT's Airport Metropolis Project to seek referrals to planning staff within airport, state and city council departments. One to two respondents from each organisation will be interviewed, with the total interviews expected to number between four and six respondents per embedded case project.

Measurement

Data will be collected using two digital recording units; using two voice recorders will be used as a risk management strategy should the first fail to work. While active note-taking

may also be employed as a further reserve strategy, its requirement is not expected. The digitised data will then be transcribed manually using MS Word 2007.

Analysis

NVivo 8.0 will be used as a tool to facilitate the analysis of interviews and also of the collected data from texts due to the volume of documentation to be analysed. Similar strings and themes of text will be grouped and coded. The coded data will then be reviewed for the relevance of interview responses to the rule structures and themes outlined in the documentary data (Silverman 2000), providing an initial identification of decision maker positions within each embedded case, and the relationships and communicative processes they use to facilitate decisions.

Related Research Questions

The rich data from the interviews is expected to validate the documentary analysis outputs for SQ1, and highlight both positive and problematic systems, processes and relationships within existing governance arrangements, thus contributing to SQ2, SQ3 and possibly support findings for SQ4 and SQ5 through any suggested improvements.

4.3.3 Governance Questionnaire

Method

Focusing on the data collected from Section 4.3.1, and applying existing theories of governance to identify relevant themes and issues for airport-city decision making integration, questionnaires will be used to verify and assess linkages between different decision making relationships and communicative processes to development outcomes. Additionally, a social network analysis will be included as a sub-section in the questionnaire to detail the links between actors and individuals for each embedded case, and will help to inform conclusions for network diversity, communicative processes, and the influence of governance on efficient and effective decision making for urban development. Questionnaires will be distributed during interviews and focus groups so that a high response rate is maintained, which is essential for social network analyses (Borgatti & Everett 1992). Identified candidates unable to attend the interviews or focus groups will be contacted via phone and then emailed or mailed the questionnaire as per their preference should they decide to participate.

Sample

The sample includes the population of urban development decision makers within each embedded case, specifically the individuals highlighted from Sections 4.3.2. Targeting the population forms part of a strategy to guard statistical conclusion validity (Scandura & Williams 2000), but only insofar as ensuring that the response rate fits the requirements of the SNA tool. Using social network analysis to investigate actor relationships and communicative processes, that run parallel to governance arrangements, is required to ensure 'hidden' influences from social relationships are accounted for, which are unlikely to be provided within the analysed documentation of Section 4.3.1.

Measurement

Data will be recorded through a mixture of written short responses and Likert scales on the distributed questionnaires. Responses will be required to evaluate the strength, relevance and effectiveness of different relationships and communicative processes on their ability to develop current urban infrastructure, and on their ability to develop future urban infrastructure that meets the needs of both airport and city.

Analysis

The social network component will be analysed using UCINet, allowing operational relationships to be identified beyond interview (or focus group) to enrich findings from the qualitative data (Frank 2005). A range of methodological issues for social network analyses applied to between-organisation relationships has already been identified in Rowley's (1997) stakeholder influences study; these issues have been modified for consideration for the proposed study, and are listed in Appendix A.

Related Research Questions

The governance questionnaire will help to verify the effectiveness of different communication processes and the strength and utility of decision maker relationships, thus directly contributing to SQ2 and provide a cross check of responses from interviews and focus groups to add internal validity to findings in SQ3.

4.3.4 Summarise Embedded Cases

Throughout and on the completion of the data collection and analysis listed above, a case study will be created to collate the data and provide a common contextual reference for

each of the embedded case studies. By providing a common contextual reference for each embedded case, similarities and differences can be better highlighted, and help for the identification of governance arrangements that appear more robust across types of urban infrastructure developments, and those more appropriate to isolated conditions or urban infrastructure functions. The identification of governance arrangements that are more robust or more 'tailored to function' will provide the core asset for SQ4, and enable a response to be formulated for RQ1.

4.4 Limitations

While it is expected that the above methodology will answer the research questions, and in turn fulfil the objectives of the study, limitations to the reliability of findings, and the ability of any findings to be applied directly to other city airport regions do exist. Contextual limitations begin with the Brisbane Airport Region being representative of an area where forecasted population and economic growth outstrip existing resources of available land to meet these new demands. Where land scarcity is less of an issue, such as Munich International Airport's recent expansion, the integration of airport and city development is not expected to be as pressing or relevant as in cases like Brisbane. The democratic political environment for Australia also plays a part in limiting the findings of the proposed research, as more centralised forms of government are likely to view integration as an inherent trait of the central 'vision' of planned societal outcomes of government. This means that limitations for the broader application of answers to RQ1 are set contextually to city airport regions that experience overlapping and competing demands for land development due to population and economic growth, in democratic societies.

Limits to the more general theoretical contributions of the research are clearly delimited to governance theory and the emerging Airport Metropolis concept. More specifically, the study does not propose to challenge or expand upon the tenets of the fundamental governance modes of hierarchy, market and network, but to use the understanding of all three to inform governance network theory to its ability to describe decision making processes that influence the outcomes of the decisions made. Within the Airport Metropolis concept, contributions are limited to describing what governance arrangements could be used to facilitate Airport Metropolis type development strategies, however stops

short of testing whether there is a 'best' form of governance to ensure airport and regionally sustainable development.

4.5 Ethics

Respondent considerations

By taking a 'do no harm' approach to research, the anonymity of respondents is essential for not only protecting the safety and livelihoods of individuals, but also for reducing response bias during interviews. While some organisation will be identifiable (such as the airport operator and local council) interviewed individuals will be kept anonymous, with the information gained from each interview to be de-identified (codes instead of names) and securely stored to minimise the likelihood of adverse information use. Once transcribed and de-identified, digital recordings will be destroyed to protect the identity of the individuals involved. Should respondents at any time feel uncomfortable with their participation in the proposed study, they have the option to remove themselves and their supplied information from the study.

Industry considerations

Airport and local urban developments may include publicly listed companies: companies with shareholders who are directly concerned with the actions taken by their companies. To protect the organisations involved in the proposed study, confidentiality and security of information will be held paramount. All implementation organisations' relevant information will be decoded upon analysis, with any publishable outputs to be reviewed by implementer officials before submission.

Community considerations

Impacts on the community while carrying out the research are expected to be non-existent: however, should community inputs be included in airport any of the documentation (be it master plans, development plans, or any other data gained during the research effort), all attempts to protect citizen anonymity within collected data will be made.

5. Progress to Date

Key-informant interviews for the first embedded case study were completed in late 2009. The data collected identified a suite of horizontal and hierarchical mechanisms between

airport and government actors, however linkages between the developer and the airport appear underdeveloped (see Donnet and Keast 2010forthcoming). Importantly, the interviews provided sufficient information to detail the perspectives of different decision makers for the development. Further investigation, via the administered network questionnaire, will help to confirm these initial findings, and provide a critical first step to validating the above methodology. Four more embedded cases are expected to be completed by July 2010.

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Appendix

Table for answering highlighted methodological issues in network analysis

	Methodological Issue	Proposed Study's Consideration
-A-	What are the boundaries of each embedded case's network of implementation actors?	The network boundary is defined in the proposed study as the included agencies, organisations, and organisational units that are requisite of undertaking and completing decision making processes, specifically in the course of implementing the target airport infrastructure project. This includes work teams that are required to make decisions on when and how to operationalise designs, through to administrative levels that determine scheduling and approve iterations to design.
-a-	What type(s) of relations will be measured?	Responses from preliminary interviews suggest that relationships transfer task information, actor information, information on other actors, and resources to facilitate implementation tasks. Accordingly, relations will be explored for evidence of each of these attributes.
-B-	Do the relations measured represent the range of relevant components of the construct?	Each of the attributes listed in -**a-** sufficiently cover expected types of relations amongst implementation actors; however, the open-endedness of interviews/focus groups will allow for additional relationship attributes to be included early in the proposed study.
-C-	Will binary or value data be collected?	Both. Binary data will be the main source of information for the network analysis, collected from questionnaires distributed to key informants within each actor. Discrepancies will be adjusted for based on interpretations made from interviews/focus groups.
-c-	Does the operationalisation of the relationship construct(s)	Due to the exploratory nature of the proposed study, it is not clear whether it is absolutely requisite of tie strength to be evaluated. Based on the uncertainty of its inclusion, tie strength will be

	require assessing the strength of ties?	assessed but can be removed during data analysis if deemed unnecessary during the course of the study.
-D-	Are the ties between implementation actors directional or non-directional?	Ties are expected to be dominantly directional, as airport decision making remains airport (i.e. operator) centric, and urban development decisions also appear centralised, however, this cannot be confirmed until interviews/focus groups have taken place. To cater for this, the questionnaire will be developed immediately after initial interviews.
-d-	Are the exchange ties between network partners reciprocal?	Actors may exchange different types of information or resources, as elaborated in **-a-**, so exchange ties are likely to be reciprocal but may vary in what type of relation attribute they exchange.

Issues adapted from Rowley (1997, 893)